



# **Transition Strategy for FAA Navigation and Landing Services**

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# Radionavigation Task Force



- *Volpe Vulnerability Assessment of the Transportation Infrastructure Relying on the Global Positioning System*
  - Published in August 2001
  - DOT Task Force formed to address mitigation measures
- FAA tasked to develop *Navigation and Landing Transition Strategy* - submitted to DOT in August 2002 ([www.faa.gov/asd](http://www.faa.gov/asd))



# Transition Strategy Objectives



- Consider current and future navigation services defined in the 2001 FRP
- Consider state of the industry since September 11<sup>th</sup>
- Create service-based approach to ground-based Navaid system reductions
  - Optimize, rather than minimize services
  - Emphasize operational readiness, dispatch capability, and servicing demand
- Continue to recognize differing aircraft equipage (*GA and Air Carrier*)



# Transition Strategy Participants



- Agency
  - NAS Architecture (ASD)
  - Regulation and Certification (AFS & AIR)
  - Air Traffic Services (AT & AF)
- Focused briefings were presented to:
  - Industry groups and trade associations
  - DOT (Pos/Nav Exec Cmte)
  - DoD (PBFA)



# Stakeholder Comments



- Industry
  - Airlines and GA
  - MITRE/CAASD analysis and support
    - » Analyzed proposed minimum operating network (MON)
    - » Sponsored Industry Day – May 7, 2002
- Comments considered in the Transition Strategy included:
  - When and what backup navigation systems and services would be available from the FAA?
  - How would the FAA adjust systems and their deployment with respect to planned aircraft equipage?



# Satellite Navigation Services

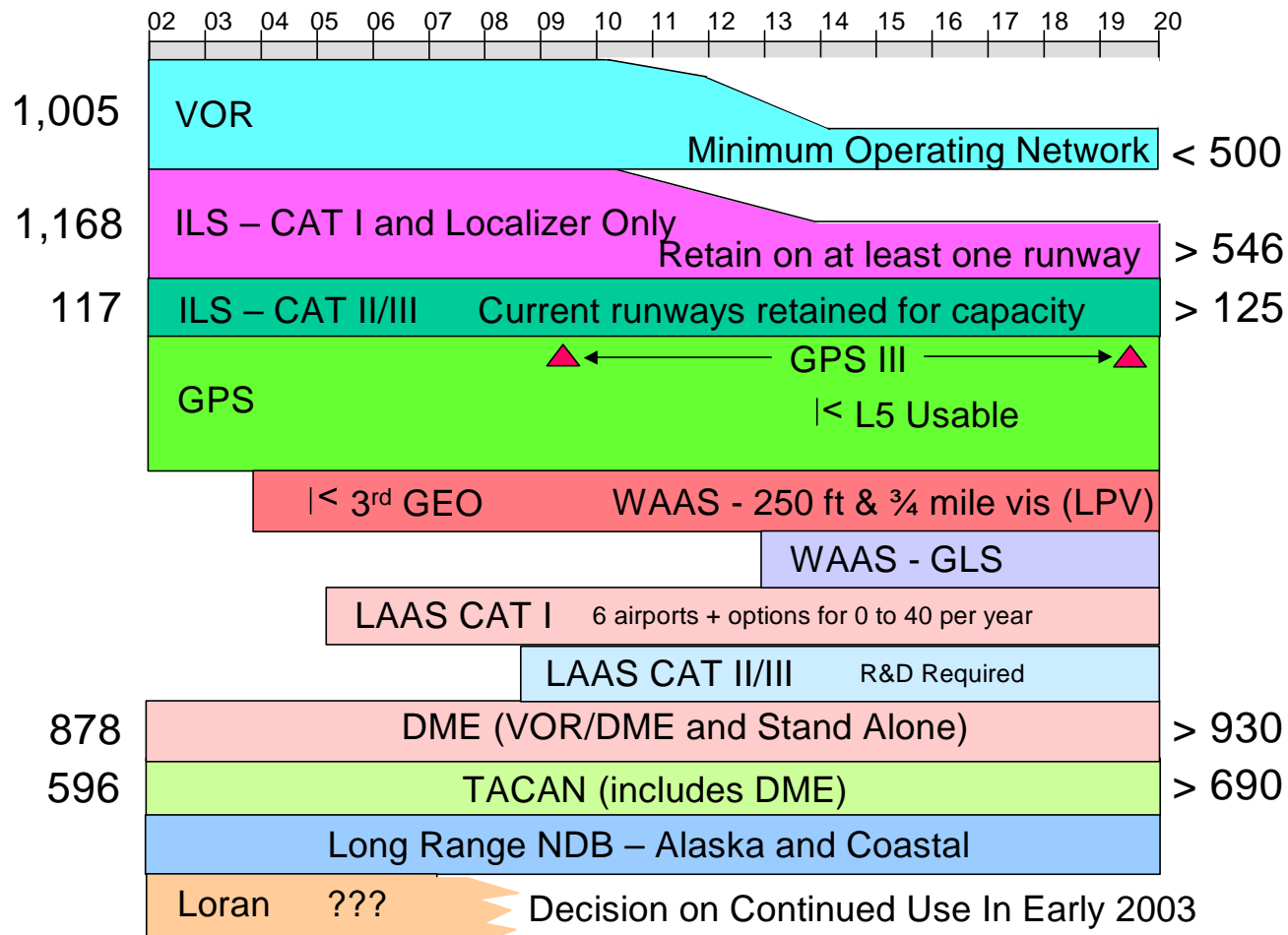


## *GPS and Augmentations*

- Global Positioning System (GPS)
- Augmented for Availability, Accuracy, Continuity, Coverage, and Integrity
  - Wide Area Augmentation System (WAAS)
  - Local Area Augmentation System (LAAS)
- WAAS procedures begin in 2003
  - LNAV/VNAV
  - LPV



# Projected Navaid Services Transition





# Current VOR Coverage



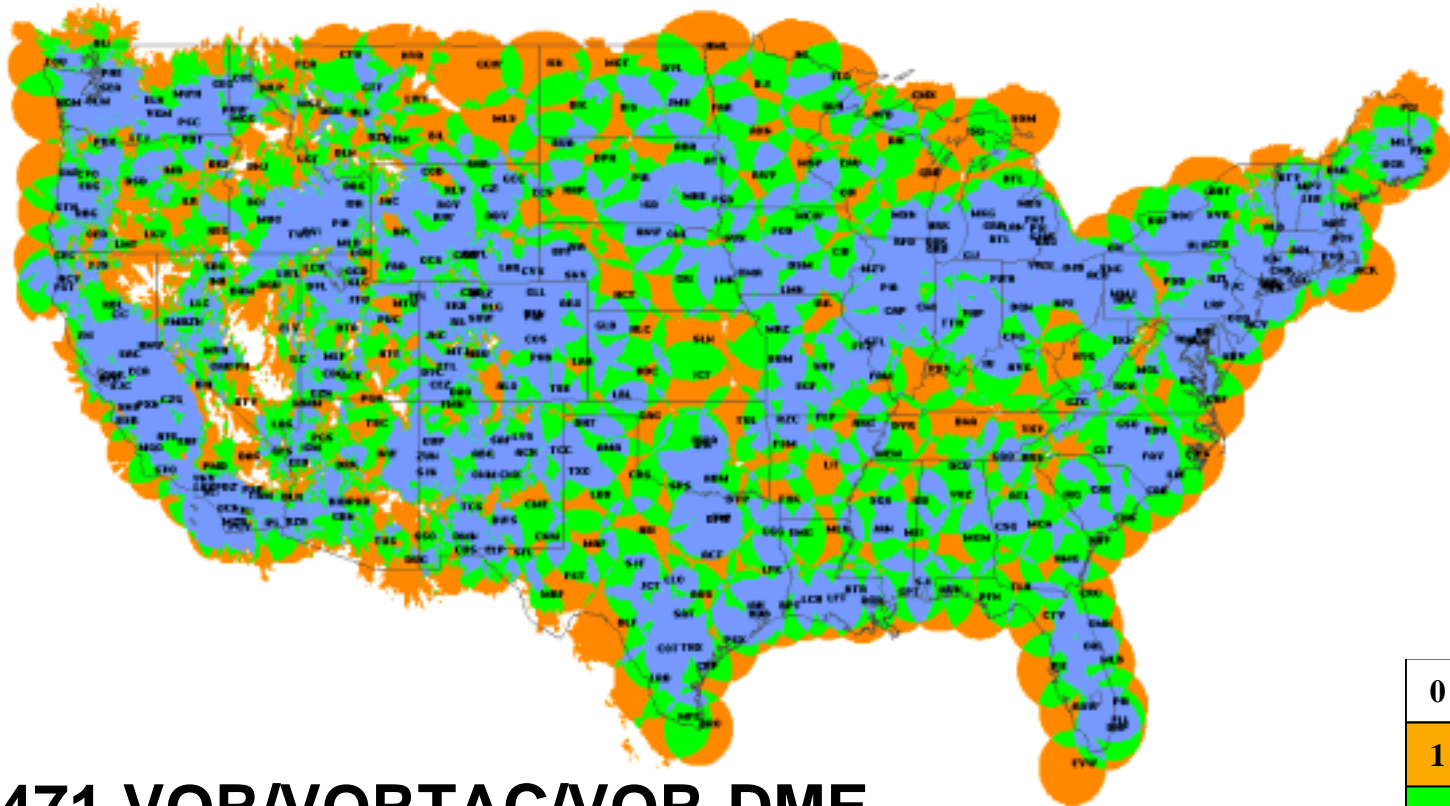
**1005 VOR/VORTAC/VOR-DME  
5,000' AGL (75nmi radius)**

0
1
2
≥3





# Projected MON VOR Coverage

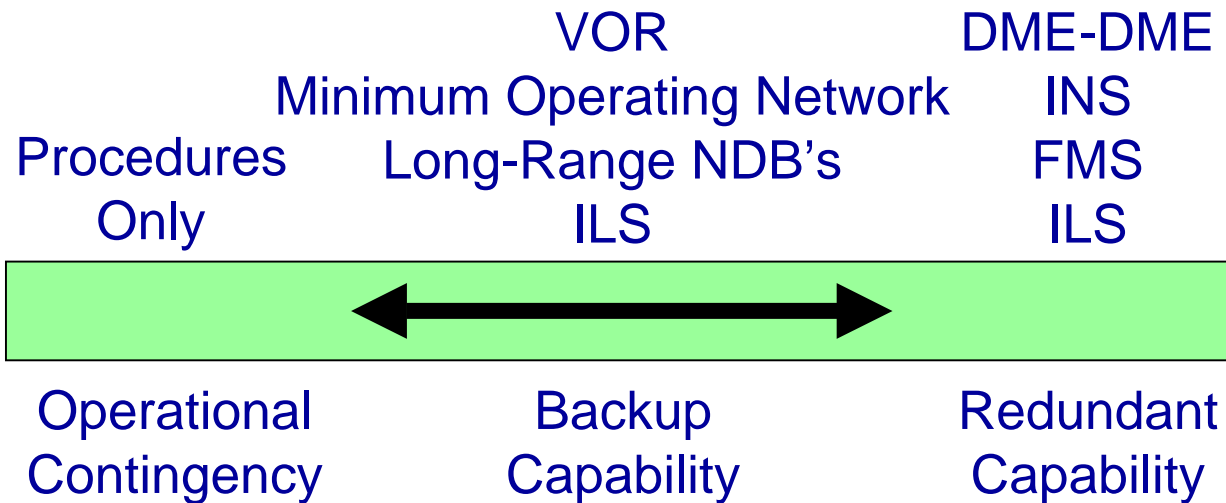


**471 VOR/VORTAC/VOR-DME  
5,000' AGL (75nmi radius)**





# GPS Backup Equipage





# Architecture & Loran-C



- Ongoing research
  - FAA & Coast Guard
- Will Loran support:
  - Aviation non-precision approach?
  - Maritime Harbor Entrance and Approach Operations?



# Summary



- FAA Has Proposed a Transition Strategy that considers:

- GPS vulnerability
- Backup requirements

The more we keep,  
the greater the cost...

- Strategy will be incorporated into the next Federal Radionavigation Plan (2003)
- Opportunity for continued discussions with aviation community
- Briefing available at [www.faa.gov/asd](http://www.faa.gov/asd)